

REMARKS

Claims 1 and 3-9 remain pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 112

Claim 5 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed. Notwithstanding and taking the Examiner's comments into account, claim 5 is amended to change "a solder" to "a filler material".

REJECTION UNDER 35 U.S.C. § 103

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sasagawa, et al. (U.S. Pat. No. 6,008,914). This rejection is respectfully traversed. Notwithstanding, Claim 1 is amended to recite the subject matter of original claim 2 (and therefore is commensurate in scope with claim 2 as originally filed). Claim 2 is cancelled.

Claim 1 calls for a laser processing method comprising, among other features, a direction setting step and an interval setting step. The direction setting step includes turning an array of focused beam spots obtained from a plurality of laser beams about a zero-order diffracted laser beam to align the array of focused beam spots in accordance with a direction of an array of a plurality of processing points of a work. The interval

setting step includes adjusting the distance from the diffractive optical element to the work to cause an interval between the focused beam spots in the array to be in agreement with an interval between the plurality of processing points in the array. Claim 1 also calls for the direction and interval setting steps to be executed after the zero-order diffracted laser beam, which has passed through the diffractive optical element, is caused to be in agreement with one of the processing points.

Sasagawa et al. disclose machining an object utilizing a zero-order diffracted light. However, Sasagawa fails to teach a direction and a spot size interval of an array of focused beam spots being set in agreement with those of processing points, on the basis of a zero-order diffracted laser beam caused to be in agreement with one of the processing points. As such, Sasagawa cannot render claim 1 obvious.

Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Claims 6, 7, 8, and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sasagawa, et al. (U.S. Pat. No. 6,008,914) in view of Moser et al. in U.S. Patent No. 5, 998,758. This rejection is respectfully traversed.

Claim 6 calls for a laser apparatus comprising, among other features, a moving unit for positioning the diffractive optical element on the optical axis by sliding it over a desired distance along the optical axis. Claim 6 also calls for the diffractive optical element to be a one-dimensional relief grating, the zero-order diffracted laser beam to be in alignment with the optical axis and in agreement with a processing point, and the moving unit to position the diffractive optical element such that the plurality of laser beams are in agreement with an interval between a plurality of processing points.

Sasagawa teaches a laser oscillator, a diffractive optical element (5) for splitting a single laser beam (10) emitted from the laser oscillator into a plurality of laser beams including a zero-order diffracted laser beam and are used in processing, a turning unit (613) for setting the diffractive optical element (5) at a desired angle by turning it about the optical axis thereof, and a moving unit for positioning the diffractive optical element 5 on the optical axis by sliding it over a desired distance along the optical axis. However, Sasagawa fails to teach or suggest that the diffractive element is a one-dimensional relief grating. Sasagawa also fails to teach or suggest that the moving unit positions the diffractive optical element such that the zero-order beam is caused to be in agreement with one of the processing points or that the array is turned about the zero-order diffracted laser beam. Sasagawa further fails to teach or suggest that the diffractive optical element generates a one-dimensional array of focused beam spots and that the turning unit turns the array of the beam spots about the zero-order diffracted laser beam. Moser fails to cure these deficiencies. As such, Sasagawa and Moser cannot render claim 6 obvious.

Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

ALLOWABLE SUBJECT MATTER

Applicant acknowledges with thanks the allowance of claims 3 and 4. The Examiner states that claim 5 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, 2nd paragraph. Accordingly, Applicant amends claim 5 to

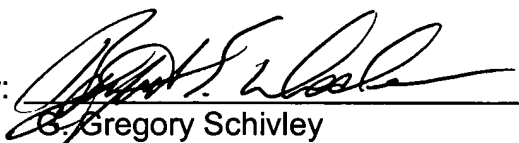
address the Examiner's concern. Therefore, claim 5 should now be in condition for allowance.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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By: 
G. Gregory Schivley
Reg. No. 27,382
Bryant E. Wade
Reg. No. 40,344

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600

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